

CLAIMS

1. A method of forming a conductive line comprising the following steps:
forming a polysilicon layer;
forming a silicide layer against the polysilicon layer;
providing a conductivity-enhancing impurity within the silicide layer; and
providing the polysilicon layer and the silicide layer into a conductive line shape.
2. The method of claim 1 wherein the silicide comprises a metal selected from the group consisting of tungsten, titanium, molybdenum and cobalt.
3. The method of claim 1 wherein the steps of forming the silicide layer and providing the conductivity-enhancing dopant therein together comprise:
depositing a metal together with the conductivity-enhancing impurity on the polysilicon layer; and
reacting the metal with the polysilicon to form the silicide layer having the conductivity-enhancing impurity therein.

4. The method of claim 1 wherein,
the step of forming the silicide layer comprises chemical vapor depositing silicide on the polysilicon layer; and

the step of providing the conductivity enhancing impurity comprises chemical vapor depositing the conductivity-enhancing impurity *in situ* with the chemical vapor depositing of the silicide.

5. The method of claim 1 wherein,
the step of forming the silicide layer comprises chemical vapor depositing a tungsten-comprising silicide on the polysilicon;

the step of providing the conductivity-enhancing impurity comprises chemical vapor depositing the conductivity-enhancing impurity *in situ* with the chemical vapor depositing of the tungsten-comprising silicide; and

the conductivity-enhancing impurity comprises a group III or a group V element.

6. The method of claim 5 wherein the step of chemical vapor depositing the conductivity-enhancing impurity comprises utilizing a precursor compound selected from the group consisting of PH_3 , AsH_3 , and diborane.

7. The method of claim 1 wherein the conductivity-enhancing impurity is provided to a concentration of at least about 1×10^{18} ions/cm³ within the silicide layer.

8. The method of claim 1 wherein the step of forming the silicide layer and the step of doping the silicide layer together comprise:

providing a target comprising a metal, silicon and the conductivity-enhancing impurity; and

sputtering of the target to form the silicide layer and the conductivity-enhancing impurity within the silicide layer, the silicide layer comprising the metal.

9. The method of claim 1 wherein the step of providing the conductivity-enhancing impurity comprises:

ion implanting the conductivity-enhancing impurity into the silicide layer after forming the silicide layer.

10. The method of claim 1 wherein the polysilicon layer is doped with the conductivity-enhancing impurity, and wherein the step of providing the conductivity-enhancing impurity comprises:

out-diffusing the conductivity-enhancing impurity from the doped polysilicon layer into the silicide layer.

11. The method of claim 1 wherein the step of providing the conductivity-enhancing impurity comprises:

gas phase chemical doping of the silicide layer.

12. The method of claim 1 wherein the conductive line is a wordline.

13. A method of lowering the resistivity of a metal-silicide layer comprising doping the metal-silicide layer with a Group III dopant or a Group V dopant.

14. The method of claim 13 wherein the dopant is provided to a concentration within the metal-silicide layer of at least about 1×10^{18} ions/cm³.

15. A method of forming a conductive line comprising the following steps:

forming a polysilicon layer;

forming a silicide layer against the layer of polysilicon;

providing a conductivity-enhancing impurity within the silicide layer; and

after providing the conductivity-enhancing impurity within the silicide layer, subjecting the silicide layer to a processing step of over 850°C for at least 10 seconds.

16. The method of claim 15 wherein the forming the silicide layer comprises depositing a metal layer over the polysilicon and reacting the metal layer with the polysilicon, and wherein the conductivity-enhancing impurity is provided within the metal layer prior to the reacting the metal layer with the polysilicon.

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17. The method of claim 15 wherein the forming the silicide layer comprises depositing a metal layer over the polysilicon and reacting the metal layer with the polysilicon, and wherein the conductivity-enhancing impurity is provided within the metal layer after the reacting the metal layer with the polysilicon.

18. The method of claim 15 wherein the conductivity-enhancing impurity is implanted into the silicide layer.

cont. 19. The method of claim 15 wherein the conductivity-enhancing impurity is provided to a concentration within the silicide layer of at least about 1×10^{18} ions/cm³.
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sub B1 cont. 20. A method of forming a conductive line comprising the following steps:
forming a polysilicon layer;
forming a silicide layer against the layer of polysilicon;
providing a conductivity-enhancing impurity within the silicide layer; and
subjecting the silicide layer to a processing step of over 850°C for at least 10 seconds while exposing the silicide layer to an oxygen-comprising atmosphere.

Please cancel claims 21-28.